

WHAT IS CLAIMED IS:

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1. An apparatus for compensating
for dispersion, comprising:

10 a wavelength-selective optical switching
unit which receives at one input port thereof a
signal into which a plurality of wavelengths
are multiplexed, and demultiplexes the signal so
as to output the demultiplexed wavelengths at
desired output ports while switching routes of
the demultiplexed wavelengths leading to the
15 output ports;

a plurality of dispersion compensation
units which are connected to the respective
output ports, and have respective, different
dispersion values; and

20 a multiplexing unit which receives at
a plurality of input ports thereof the
demultiplexed wavelengths output from said
dispersion compensation units, and multiplexes
the demultiplexed wavelengths to generate a
25 signal.

30 2. The apparatus for compensating for
dispersion as claimed in claim 1,

wherein said wavelength-selective
optical switching unit further includes a
specific output node that is not connected to
35 the dispersion compensation units, and outputs a
specific demultiplexed wavelength from the
specific output port.

5 3. The apparatus for compensating for
dispersion as claimed in claim 1,
 wherein said multiplexing unit
receives a specific wavelength from a specific
input port among the plurality of input ports
10 and multiplexes said specific demultiplexed
wavelength into a plurality of demultiplexed
wavelengths output by said plurality of
dispersion compensation units.

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 4. An apparatus for compensating for
dispersion, comprising:
20 an optical circulating unit which
includes a first port, a second port and a
third port, and which receives at the first
port a first signal into which a plurality of
wavelengths is multiplexed so as to output
25 from the second port the first signal, and
receives a second signal at the second port so
as to output from the third port the second
signal;
 a wavelength-selective optical switching
30 unit which receives from said second port and
at one input port a signal into which said
plurality of wavelengths are multiplexed and
demultiplexes the signal so as to output the
demultiplexed wavelengths at desired output ports
35 while switching routes of the demultiplexed
wavelengths leading to the output ports; and
 a plurality of dispersion compensation

units which are connected to the respective output ports of said wavelength-selective optical switching unit, and have respective, different dispersion compensation values; and

5 a plurality of reflecting units which reflect and return output light at end section of said respective dispersion compensation units.

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5. A wavelength division multiplexing communications system,

15 wherein the apparatus for compensating for dispersion as claimed in claim 1 is provided along an optical transmission line.

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6. An apparatus for compensating for dispersion as claimed in claim 1,

25 wherein the respective dispersion compensation units are set to have the dispersion compensation values at regular intervals.

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7. The apparatus for compensating for dispersion as claimed in claim 1,

35 wherein the multiplexing unit comprises a wavelength-selective optical switching unit which receives at the plurality of input ports thereof the demultiplexed wavelengths and multiplexes said demultiplexed wavelengths so as

to output the signal at the output port while switching the routes of the demultiplexed wavelengths leading to the output port; and comprising

5 an optical loss adjusting unit which variably adjusts an optical loss of the respective demultiplexed wavelengths from the respective input ports to said one output port.

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8. An apparatus for compensating for dispersion, comprising:

15 a plurality of apparatuses for compensating for dispersion, each of which has an identical structure to the apparatus for compensating for dispersion as claimed in claim 6; and

20 a different dispersion compensation value, per apparatus for compensating for dispersion, which is set at regular intervals in the dispersion compensation units within each of the apparatus for compensating for dispersion.

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9. An apparatus for compensating for dispersion as claimed in claim 1,

30 wherein said wavelength-selective optical switching unit includes

a first diffraction device which spectroscopes input light;

35 a plurality of mirrors which switch routes of wavelengths spectroscoped by said diffraction device; and

a second diffraction device which receives from said plurality of mirrors the spectroscoped wavelengths and multiplexes the spectroscoped wavelengths.

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10. A wavelength division multiplexing communications system, comprising a plurality of apparatuses for compensating for dispersion at different locations along an optical transmission line, said plurality of apparatuses for compensating for dispersion being each identical to the apparatuses for compensating for dispersion of claim 8.

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